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## SHIP, SATELLITE, AND AIRCRAFT ASSESSMENT OF COASTAL OPTICAL VARIABILITY IN MISSISSIPPI SOUND NEAR MOBILE BAY, ALABAMA

The highly variable light regime in coastal waters affects, and is affected by, the dissolved and particulate materials in the water. Unraveling the in-water optical properties through the hyperspectral reflectance signature holds promise. Our objectives are to: (1) characterize the spatial optical variability in a dynamic coastal environment impacted by high concentrations of dissolved and particulate materials, and (2) perform an optical water mass classification using satellite imagery and in situ data. During May 2002, we conducted multi-ship surveys in the coastal waters of the northern Gulf of Mexico near Mobile Bay, Alabama. Continuous, underway surface measurements and vertical profiles at 63 stations were collected. Optical properties included hyperspectral remote sensing reflectance, partitioned absorption coefficients (phytoplankton, detrital, and CDOM components), beam attenuation, diffuse attenuation, backscattering coefficient, HPLC phytoplankton pigment concentrations, particle size, volume scattering function, and organic/inorganic particle loads. In addition, SeaWiFS and MODIS satellite imagery and PHILLS hyperspectral aircraft imagery clearly demonstrate the dynamic nature of this environment. A new optical classification system based on the partitioned absorption coefficients is used to distinguish water masses and track coastal features.